

## **REMARKS**

This application has been reviewed in light of the Office Action mailed March 13, 2007.

Reconsideration of this application in view of the below remarks is respectfully requested.

Claims 1 – 3, 6 – 11 and 14 – 16 are pending in the application with Claims 1, 3, 6 – 11 and 14 – 16 being in independent form. By the present amendment, Claims 1, 3, 6 – 11 and 14 – 16 are amended.

The claims have been amended to recite: “...gradually forgetting past data...said fraud being identified when said probability of generation of the input data largely deviates from said stored parameters.”

Also, Claims 3, 8, 9, 11 and 16 recite: “...a degree of change or logarithmic loss of a probability distribution...”

Support for the features recited in the claims can be found throughout the specification, for example, page 1, lines 7 – 14, page 25, lines 1 – 7, and page 28, lines 7 – 19. Therefore, no new subject matter is introduced into the disclosure by way of the present amendment.

### **I. Rejection of Claims 1 – 3, 6 – 11 and 14 – 16 Under 35 U.S.C. § 101**

Claims 1 – 3, 6 – 11 and 14 – 16 are rejected under 35 U.S.C. § 101 as allegedly directed to non-statutory subject matter. Specifically, the Examiner contends that the claimed subject matter does not produce a useful result because the claims fail to recite how the claimed output achieves the intended use of “detecting anomalous data indicative of fraud”. Thus, according to the Examiner, the claimed result is merely an intermediate result before the useful result, which is the indication of fraud or lack of fraud.

However, the “probability of generation” calculated by the claimed invention is itself the useful result of the invention in that the “probability of generation” identifies anomalous data

based on whether or not the “probability of generation” for a particular data exceeds a predefined threshold value. In addition, the Field of Invention states " ...detecting an abnormal value or an outlier which largely deviates from data patterns obtained so far from multi-dimensional time series data."

Consequently, fraud is identified when said probability of generation of the input data largely deviates from the stored parameters, as recited by the independent claims. Since the claims recite a useful result, Applicants respectfully submit that the rejection is obviated, and therefore Applicants respectfully request withdrawal of the rejection with respect to Claims 1 – 3, 6 – 11 and 14 – 16 under 35 U.S.C. § 101.

## **II. Rejection of Claims 1 – 3, 6 – 11 and 14 – 16 Under 35 U.S.C. § 102(e)**

Claims 1 – 3, 6 – 11 and 14 – 16 are rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 6,904,409 issued to Lambert et al.

Lambert et al. only uses histograms for creating the profile as the pattern from the data and does not use other probability distributions. On the other hand, the present invention creates a profile by using not only a histogram, but also finite mixture distributions and combinations of histograms with finite mixture distributions. Thereby, the present invention is capable of providing a better representation of statistical patterns.

Hence, Lambert et al. fails to disclose or suggest that the parameter output means updates and rewrites a stored parameter while forgetting past data according to newly read data. Rather, the Lambert method updates customer profiles in which a new transaction is classified in terms of one or more profile variables, however there is no suggestion in Lambert et al. of forgetting, or removing, past data.

Moreover, the method disclosed in Lambert et al. is applicable to “normal distributions because normal distributions can be represented by two parameters (typically, the mean and variance)”. (See: column 15, lines 58-65). However, the claims recite three parameters, mean, variance of a normal distribution AND weight of a normal distribution.

Additionally, the present invention, as recited in the claims, updates parameter values while gradually forgetting past data. In contrast, Lambert et al. does not disclose or suggest this feature for learning .

Moreover, as recited in Claims 3, 8, 9, 11 and 16, the present invention calculates a degree of outlier of the data based on a degree of a change or logarithmic loss of a probability distribution estimated from values of the parameters. In contrast, Lambert et al. does not disclose or suggest calculation of the outliers based on a degree of a change or logarithmic loss of a probability distribution.

It is well-settled by the Courts that “[A]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.” Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company, et al., 730 F.2d 1452, 221 USPQ 481 (Fed. Cir., 1984).

Therefore, as demonstrated above, because Lambert et al. does not disclose each and every element recited in the present claims, Applicants respectfully submit that the rejection has been obviated. Accordingly, Applicants respectfully request withdrawal of the rejection with respect to Claims 3, 8, 9, 11 and 16 under 35 U.S.C. § 102(e).

## CONCLUSIONS

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 3, 8, 9, 11 and 16 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Applicant's undersigned attorney at the number indicated below.

Respectfully submitted,



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